**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
NEW ENGLAND – REGION 1
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March 29, 2018

James Cashwell
Olin Corporation
3855 North Ocoee Street
Suite 200
Cleveland, TN 37312

Subject: EPA Review and Partial Conditional Approval of GW-413 Area Supplemental Investigation
Olin Chemical Superfund Site, Wilmington, Massachusetts

Dear Mr. Cashwell:

In accordance with Paragraph 40 of the Administrative Settlement Agreement and Order on Consent ("AOC"), Region I of the United States Environmental Protection Agency ("EPA") has completed a review of the above referenced letter report prepared by AMEC Foster Wheeler on March 5, 2018 (the "Report").

Pursuant to Section 1.III.D of the Remedial Investigation/Feasibility Study Statement of Work ("RI/FS SOW"), EPA solicited comments from external stakeholders. EPA has consolidated certain written comments received within the context of this letter. Original written comments received by EPA are attached.

The GW-413 cluster was installed by Olin at the request of EPA to close a data-gap to verify that the northern extent of contamination for OU3 had been fully delineated. The detection of relatively high concentrations of NDMA in the deep overburden and, to a lesser extent, in shallow bedrock groundwater was not anciticpated based on the former Conceptual Site Model (CSM) for the Site. The lack of elevated detections in the GW-415 and 416 well clusters is confounding.

EPA remains concerned that the incomplete understanding of the hydrology and bedrock topography in this portion of the study area will make it difficult to determine if the well clusters proposed in locations A, B or C are well-placed. Therefore, as reflected in the conditions and comments below, EPA is requesting addition investigation efforts be completed prior to the placement of additional well clusters.

## Conditions

1. EPA approves of Step 1 as proposed in Section 4.0 of the Report.

2. If a suitable existing well or wells are identified and can be accessed on the AllCoat property, they should be sampled consistent with Step 5.

3. EPA does not approve of locations A, B and C as identified in Steps 2, 3 and 4.

4. Concurrent with the completion of Step 1, Olin should collect another round of NDMA and other data from wells GW-413, 415 and 416; and collect another round of synoptic water level data from these and other wells in this portion of the study area.

5. Olin should compile and present existing information on the bedrock hydrology and topography in this portion of the study area, including a full interpretation of the borehole geophysical logs presented in Appendix B and figures which present bedrock contours.

6. Per General Comment no.5 below, Olin should collect deep discrete groundwater samples in the general areas to the north and west of the current study area.

7. Olin should conduct whatever additional studies may be required, or perform whatever additional evaluations of existing data, as are required to provide a plausible explanation for the relatively high concentrations of NDMA detected in GW-413.

8. Olin shall submit a revised proposal for the placement of additional well clusters, supported by the supplemental data and investigations, and an updated CSM as requested herein.

9. No later than April 13, Olin shall provide a written response to the Conditions and Comments in this letter, and propose a schedule for the completion of Conditions 1 through 8.

**General Comments**

1. Updated maps of bedrock groundwater elevations and contours that include data for GW-413, GW-415, and GW-416 locations were not provided. *Please provide.*

2. The generalizations in this Report about vertical gradients are overly-broad and not technically supported by the entire data set. The Report states "...generally downward vertical gradients observed higher in the watershed on the Olin Site..." and provides three examples of downward vertical gradients, but does not mention that upward vertical gradients were present at GW-53 and GW-54 at the Olin Site. The letter also notes "upward vertical gradients near MMB (GW-65 and GW-404)," but does not describe the downward vertical gradient at GW-73, which is located between GW-65 and GW-404. *The updated conceptual site model for hydraulic and NDMA conditions to the north of the 51 Eames Street site should be revised to include a more robust discussion of vertical hydraulic gradients, particularly with regard to possible flow between deep overburden and shallow bedrock.*

3. Many of the groundwater elevation contours in the figures are not technically supported by the deep overburden groundwater elevation data (e.g., contours east of GW-415 and the contours at the DSN Neoresins property). It is uncertain how these contours were generated. *These contours and associated groundwater flow directions should be revised, and to the extent feasible, they should be based upon hydraulic measurements collected from monitoring wells. Inferred contours should be identified as such.*

4. *An additional round of synoptic groundwater level monitoring should be performed. The groundwater elevation at GW-413S/D of 80.31'/80.52' is approximately a foot lower than any of the wells in the area and comparable to the elevations of wells in Maple Meadows Brook. This data needs to be verified.*

5. *Rather than selecting single locations to install additional monitoring wells, Olin should consider collecting a series of deep discrete groundwater samples to the west and north of GW-413 to better characterize the extent of NDMA and identify the most suitable locations for permanent monitoring wells. Discrete groundwater sampling could also be used to better characterize the source of NDMA to the south of GW-413. There are a varity of direct-push sampling methods available.*

**Specific Comments**

1. Section 2.2.1. It is stated in this section that, "both the 82 and 81 foot elevation contours impinge upon areas that are clearly upland in character, indicating a relative drop in land surface corresponding to surface water and groundwater elevations." *The meaning and significance of this observation is unclear and should be clarified.*

2. Section 2.2.1. It is stated in this section that, "This condition is expected to leave locally isolated areas of overburden groundwater." *The meaning and significance of this observation is unclear and should be clarified.*

3. Section 2.2.1. It is stated in this section that "the relative elevation of intervening storm water impoundments on the Koch property may be higher than surface water in either of these two wetland complexes." *Are these small impoundments significant to deep overburden groundwater flow? These features should be identified on the site figures.*

4. Section 3.0. An updated CSM is provided as a text description of regional hydrology based on the investigations performed to date. However, there is no explanation provided for the elevated detections of NDMA at GW-413, and there is no supporting figure or figures provided. The overall groundwater conceptual model for the Site has the formation of NDMA within the DAPL. From DAPL, NDMA slowly diffuses to overlying groundwater. If this is true, then a DAPL pool should be in proximity to GW-413. The nearest known DAPL pool is southwest of GW-413 under Jewel drive. The NDMA formation and diffusion process doesn't explain the relatively high 1,700 ng/l concentration of NDMA at GW-413. Olin needs to rethink their proposed conceptual site model to better explain the presence of high concentrations of NDMA at GW-413. *Please expand upon the updated CSM for this portion of the study area to include*

*rationale for the detections of NDMA at GW-413. If no rationale exists, additional investigation into the source of NDMA at GW-413 should be proposed. The updated CSM should be illustrated in a supporting figure or figures.*

5. Section 3.0. It is stated in this section that, "Along the Upper East Ditch northeast of GW-415, surface water and overburden groundwater pinches out against elevated bedrock near the MBTA underpass at Main Street, indicating the absence of a well-connected overburden groundwater flow path." Geologic formations may "pinch out" but groundwater does not. Depending upon the transmissivity of the bedrock in this area, groundwater maybe transmitted from the overburden and through the bedrock. *The meaning and significance of this statement is unclear and should be clarified.*

6. Second Figure 2 (presumed to be Figure 3). The "Possible Groundwater Flow Paths" shown in in this figure appear to be based upon groundwater elevation contours that are questionable. As such, the possible flow paths to the north and west may vary. *The selection of the proposed supplemental monitoring locations should also take into consideration the estimated bedrock surface contours to the north and west of well GW-413S.*

Please call me if you have any questions. Please provide EPA with a minimum of five (5) days notice prior to performing any OU3 field work.

Sincerely,

James M. DiLorenzo
Remedial Project Manager
USEPA Region 1 - New England

Attachments: Nobis Comment Email
GeoInsight Comment Letter
WERC Comment Letter

Cc: Lynne Jennings, EPA
Chris Smith, EPA
Jeff Brunelle, Nobis
Garry Waldeck, MassDEP
Jeff Hull, Town of Wilmington
Michael Webster, GeoInsight
Martha Stevenson, WERC